Claims:

1. A planar surface illuminator for use beneath below a liquid crystal display panel comprising:

   a light guide plate comprising an optical input surface;

   a plurality of point light sources positioned to a side of the light guide plate; and

   a number of scattering dot-patterns positioned on and integrated with the optical input surface, wherein a group of at least three scattering dot-patterns, one group for each one point light source, is present for converting Gauss beams emitted by from the point light sources to light beams having a uniform light intensity across their widths, for transmitting through the optical input surface into the light plate.

2. The planar surface illuminator as described in claim 1, wherein the scattering dot-patterns protrude outwardly from the optical input surface, and have a hemispherical shape or a tetrahedron shape.

3. The planar surface illuminator as described in claim 2, wherein all the scattering dot-patterns have a same size.

4. The planar surface illuminator as described in claim 2, wherein a size distribution of scattering dot-pattern in each group of at least three scattering dot-patterns is complementary with an optical energy distribution of a Gauss beam of the corresponding one point light source.

5. The planar surface illuminator as described in claim 4, wherein among the group of at least three scattering dot-patterns, the nearer a given scattering dot-pattern is to its corresponding point light source, the smaller will be the size the scattering dot-pattern.

6. The planar surface illuminator as described in claim 1, wherein the scattering dot-patterns are formed as concave surface in the optical input surface, and said surface are hemispherical or tetrahedron in shape.

7. The planar surface illuminator as described in claim 6, wherein all the scattering dot-patterns have a same size.

8. The planar surface illuminator as described in claim 6, wherein a size distribution of scattering dot-patterns in each group of at least three scattering dot-patterns is complementary with an optical energy distribution of a Gauss beam of the corresponding one point light source.

9. The planar surface illuminator as described in claim 8, wherein among the group of at least three scattering dot-patterns, the nearer a given scattering dot-pattern is to its corresponding point light source, the smaller will be the size of the scattering dot-pattern.

10. The planar surface illuminator as described in claim 1, wherein the scattering dot-patterns are injection molded on the optical input surface.

11. The planar surface illuminator as described in claim 1, wherein the scattering dot-patterns are printed on the optical input surface.

12. The planar surface illuminator as described in claim 1, wherein the scattering dot-patterns adhere to the optical input surface.

13. The planar surface illuminator as described in claim 1, wherein the point light sources are light emitting diodes.

14. The planar surface illuminator as described in claim 1, further comprising a reflective film coated on a bottom surface of the light guide plate.

15. The planar surface illuminator as described in claim 1, wherein further comprising a reflective sheet covering a bottom surface of the light guide plate.

16. The planar surface illuminator as described in claim 1, wherein the light guide plate is substantially shaped as a rectangular plane plate and further comprises an optical output surface, a bottom surface, first and second side surfaces, and a third side surface opposite to the optical input surface, the bottom surface having a plurality of reflective dot-patterns thereon.

17. The planar surface illuminator as described in claim 16, wherein the reflective dot-patterns are uniformly spaced on the bottom surface.

18. The planar surface illuminator as described in claim 1, wherein the optical light guide plate is substantially shaped as a wedge.

19. A planar surface illuminator for use beneath below a liquid crystal display panel comprising:

a light guide plate comprising an optical input surface;

a plurality of point light sources positioned beside said optical input surface; and

a number of scattering structures positioned around the optical input surface and essentially between the light sources and a center of said light guide plate; wherein each of said point light sources is equipped with more than one of said scattering structures for converting Gauss beams emitted by from said each of the point light sources to light beams having a uniform light intensity across corresponding widths thereof, for transmitting through the optical input surface into the light plate.

20. The illuminator as described in claim 19, wherein each of said scattering structures defines only one scattering center.